

Carroll County, Maryland  
**Ten Year Solid Waste  
Management Plan**



**AUGUST, 2006**

# **CARROLL COUNTY, MARYLAND**

## **TEN YEAR SOLID WASTE**

### **MANAGEMENT PLAN**

**2002 - 2012**  
**(Updated 2006)**

**Submitted by the**

**Board of Carroll County Commissioners**  
**225 N. Center Street**  
**Westminster, MD 21157-5194**

**Carroll County Department of Public Works**  
**Phone: 410/386-2035**  
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**<http://ccgovernment.carr.org>**

**Revised: August, 2006**



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- B. CHAPTER 185, SOLID WASTE ORDINANCE
- C. CARROLL COUNTY CODE, ZONING ORDINANCE
- D. TITLE 12 - SOLID WASTE PROJECTS
- E. CARROLL COUNTY RECYCLING PLAN
- F. CARROLL COUNTY'S SOLID WASTE DISPOSAL FEES
- G. RESOLUTION No. 658-06
- H. EXECUTIVE SUMMARY – CARROLL COUNTY, MARYLAND SOLID WASTE MANAGEMENT OPTIONS – R.W. BECK

RESOLUTION NO. 693-07

(Ten Year Solid Waste Management Plan)

**WHEREAS**, the County Commissioners of Carroll County, Maryland are required by Title 9, Subtitle 5 of the Environment Article of the Annotated Code of Maryland to review and revise the Carroll County, Maryland, Master Plan for Solid Waste; and

**WHEREAS**, on October 30, 2006, the Carroll County Planning and Zoning Commission certified that the proposed amendment is consistent with the appropriate comprehensive and master plans; and

**WHEREAS**, on January 30, 2007, the County Commissioners of Carroll County conducted a public hearing on the proposed amendment.

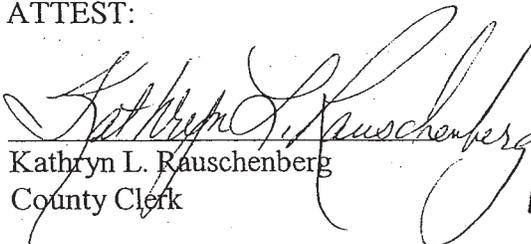
**NOW, THEREFORE, BE IT RESOLVED**, that the *Carroll County Ten Year Solid Waste Management Plan 2002-2012 (Updated 2006)* be amended to reflect the County's current plans for satisfying the Maryland Department of the Environment's guidelines and requirements.

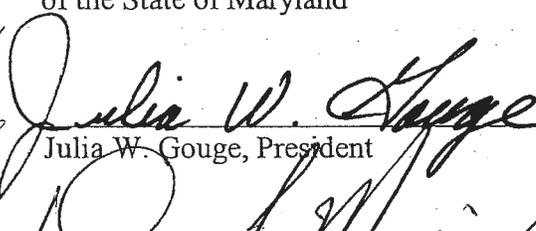
**BE IT FURTHER RESOLVED**, that this amendment is adopted subject to modification or disapproval by the Maryland Department of the Environment in accordance with the Annotated Code of Maryland, Environment Article, Section 9-507.

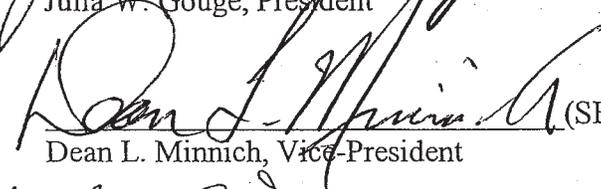
**RESOLVED** this 22nd day of February, 2007.

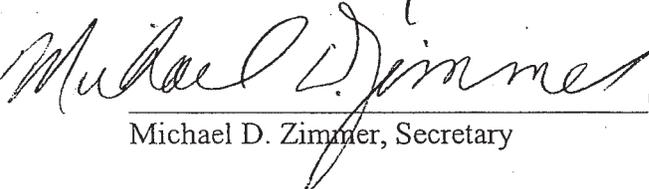
THE COUNTY COMMISSIONERS OF  
CARROLL COUNTY, MARYLAND  
a body corporate and politic  
of the State of Maryland

ATTEST:

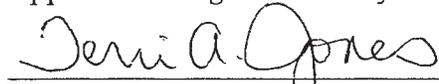
  
Kathryn L. Rauschenberg  
County Clerk

 (SEAL)  
Julia W. Gouge, President

 (SEAL)  
Dean L. Minnich, Vice-President

February 22, 2007  (SEAL)  
Date: Michael D. Zimmer, Secretary

Approved for legal sufficiency:

  
Terri A. Jones, Deputy County Attorney



**MARYLAND DEPARTMENT OF THE ENVIRONMENT**

1800 Washington Boulevard, Suite 605 • Baltimore MD 21230-1719  
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Martin O'Malley  
Governor

Shari T. Wilson  
Secretary

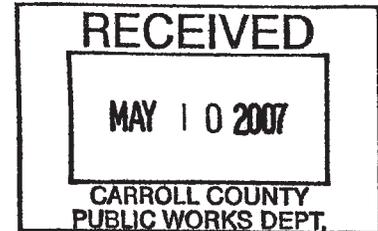
Anthony G. Brown  
Lieutenant Governor

May 8, 2007

Robert M. Summers, Ph.D.  
Deputy Secretary

CERTIFIED MAIL  
Return Receipt Requested

Mr. J. Michael Evans, Director  
Department of Public Works  
Carroll County Government  
225 North Center Street  
Westminster MD 21157



Dear Mr. Evans:

The Maryland Department of the Environment (the "Department") has completed review of the revised Carroll County Ten Year Solid Waste Management Plan (2002-2012), 2006 Update (the "revised Plan"), which was adopted by the County Commissioners of Carroll County on February 22, 2007. The revised Plan addressed the comments presented to the County by the Department's July 11, 2006 letter. We would like to take this opportunity to thank Ms. Vinnie Legge of your staff for her cooperation with the Department in completing this important project.

Based on this review, the Department has determined that the revised Plan satisfies the Department's guidelines and complies with the defined requirements of the Code of Maryland Regulations (COMAR) 26.03.03. In accordance with §9-507(a) of the Environment Article, Annotated Code of Maryland, the revised Plan is approved.

Please be advised that §9-503(a) of the Environment Article, Annotated Code of Maryland, requires each County to have a County plan or a plan with adjoining counties that covers at least the next ten-year period following adoption by the County governing body. As the County Commissioners of Carroll County adopted the revised Plan on February 22, 2007, the new plan will be due to the Department on or before **February 22, 2017**. At that time, we recommend that the County submit a draft plan to the Department so that we can review and provide comments before the County adopts the plan.

However, please note that §9-503(b) of the Environment Article, Annotated Code of Maryland, requires that the County review its plan at least once every three years in accordance with a schedule set by the Department. Also, §9-506(b)(2) requires the County to submit a report of its review conducted at least every two years including any revision or amendment of the County plan that has been adopted. Therefore, the County must submit the progress reports required by §9-506(b) and the three-year plan review report **once every two years, on or before February 22, 2009**.

Please note that the progress report may include, but is not limited to, the date the County reviewed its plan and based on the review, what aspect of the plan does the County consider updating or revising; any new information or any new laws, regulations, or local ordinances that may require the County to update or revise its plan; the status of any new projects that are currently identified in the plan; discussion of any new proposed facilities that the County is reviewing for possible inclusion in the plan; discussion of the current landfill capacity projection and its bearing on the schedule for the development of future disposal alternatives; and any changes to the recycling rates.

In addition, §9-503(c) of the Environment Article, Annotated Code of Maryland, provides that each County adopts and submits to the Department a revision or amendment to its County plan if the County considers a revision or amendment necessary or if the Department requires a revision or amendment. The Department will notify the County if a revision or amendment is required. However, if the County considers a revision or amendment is necessary, we recommend that the County submits a draft plan to the Department so that we can review and provide comments before the County adopts a revision or amendment to its approved and adopted plan. The County must comply with the public hearing requirements of §9-5039(d) of the referenced Article prior to the adoption of any revision or amendment.

Thank you for your continuing interest and cooperation in providing sound and long-term solid waste management planning for the County. If you have any comments or questions regarding this letter, please contact me or Mr. A.Hussain Alhija, Chief, Design & Certification Division, at (410) 537-3375.

Sincerely,



Horacio Tablada, Director  
Waste Management Administration

HT:KH:lak

cc: Mr. Edward Dexter  
Ms. Hilary Miller

David L. Brauning, Chairman  
Dennis E. Wertz, Vice Chair  
Melvin E. Baile, Jr.  
Michael R. Guerin  
Wayne B. Schuster  
Charles M. Chadwick  
Robert B. Slade, alternate  
Julia W. Gouge, ex-officio  
Steven C. Horn, secretary



Planning and Zoning Commission  
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October 30, 2006

Mr. J. Michael Evans, Director  
Department of Public Works  
Carroll County Government  
225 North Center Street  
Westminster, Maryland 21157

RE: Carroll County, Maryland  
Ten Year Solid Waste Management Plan 2002-2012 (Updated 2006)

Dear Mr. Evans:

The Carroll County Planning and Zoning Commission hereby certifies that the above referenced Ten Year Solid Waste Management Plan is consistent with the Carroll County Master Plan, as amended.

Sincerely,

A handwritten signature in cursive script that reads "David L. Brauning".

David L. Brauning, Chairman  
Carroll County Planning and Zoning Commission

A handwritten signature in cursive script that reads "Steven C. Horn".

Steven C. Horn, Secretary  
Carroll County Planning and Zoning Commission

DLB/SCH/kf

**CARROLL COUNTY**  
*a great place to live, a great place to work, a great place to play*

# **GLOSSARY**

**GLOSSARY**

**TERMS AS THEY APPLY TO THIS DOCUMENT**

The following terms are used in the Carroll County Solid Master Plan as defined herein:

**Aeration** - The process of exposing waste material, such as compost, to air to promote aerobic decomposition. *Forced aeration* refers to the use of blowers in compost piles.

**Aerobic** - A biochemical process or condition occurring in the presence of oxygen.

**Agricultural Waste** - A “Domestic animal manure or residuals in liquid or solid form generated in the production of poultry, livestock, fur-bearing animals and their products. Agricultural waste includes residuals generated in the production and harvesting, but not of subsequent processing of all agricultural, horticultural, or aquacultural commodities. Agricultural waste does not include land clearing debris unless the cleared land is intended solely for agricultural purposes.” (COMAR 26.04.07.02)

**Air Classification** - A process in which a stream of air is used to separate mixed material according to the size, density and aerodynamic drag of the pieces.

**Anaerobic** - A biochemical process or condition occurring in the absence of oxygen.

**Asbestos** - Any of a number of naturally occurring mineral fibers of the serpentine and amphibole series including actinolite, amosite, anthophyllite, chrysolite, crocidolite and tremolite.

**Biohazard** - Posing a clear environmental problem which may cause disease or infections.

**Bioreactor Landfill** - The recirculation of leachate to encourage and accelerate the natural decomposition of solid waste.

**Board** - The duly elected Board of County Commissioners for Carroll County.

**Bulky Waste** - Large items of refuse including, but not limited to, appliances, furniture, large auto parts, non-hazardous construction, demolition materials, trees, branches and stumps which cannot be handled by normal solid waste processing, collection and disposal methods.

**Buy-Back Center** - A facility where individuals bring recyclables in exchange for payment.

**Cell** - The permitted area of compacted wastes in a landfill that is confined in an area lined by either natural soil, clay or a synthetic material.

**Closed-Ended Collection System** - A solid waste collection system, organized by a public or private body,

## *Solid Waste Management Plan - Carroll County, Maryland*

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wherein one vendor or a collection team operates in a service area and collection service is regulated and controlled.

**Closure** - The physical act of securing, covering, and otherwise closing a terminated solid waste site/facility in accordance with all applicable State and/or Federal regulations.

**Commercial Waste** - Waste materials originating in wholesale, retail, institutional or service establishment, such as office building, stores, markets, theaters, hotels or warehouses.

**Commingled Recyclables** - A mixture of several types of recyclables.

**Composting** - “The process in which organic solid waste is biologically decomposed under controlled conditions to yield a nuisance-free humus-like product.” (COMAR 26.07.02)

**Construction and Demolition Waste** - Materials resulting from the construction, remodeling, repair or demolition of buildings, bridges, pavements and other structures, including concrete, blacktop, bricks, concrete block, stucco, glass, and wood from demolished structures and other inert waste materials as may be approved by Carroll County.

**County Plan/Solid Waste Management Plan** - The County’s planning document representing the comprehensive plan, and all subsequent revisions, developed to provide solid waste management services for County residents and business.

**Curbside Collection** - Programs where waste or recyclable materials are collected at the curb, often from special containers, to be brought to various processing facilities.

**Drop-Off Site** - A central site serving an area for the safe and convenient deposit of a specifically designated waste.

**Dump** – An unimproved land site at which solid waste is disposed of in an uncontrolled manner that does not protect the environment, is susceptible to open burning, or is exposed to the elements, vectors and scavengers.

**Electronics** – Computers and monitors, televisions, central processing units, cell phones, printers and other computer-related accessories.

**Enterprise Fund/The Solid Waste Management Enterprise Fund** - The authorized proprietary fund managed by Carroll County Comptroller’s Office for the sole purpose of providing for solid waste management in Carroll County. The fund utilizes an accounting method and funding mechanism for ventures providing goods and services to the public on a continuing basis. It is financed by revenues produced and user charges, and all assets and liabilities are reflected on the balance sheet.

**Fines** - Small diameter residue resultant from a variety of processing that intend to refine materials for further processing of volume reduction.

**Hazardous Waste** - Any refuse, sewage sludge, or other waste material or combination of refuse, sewage sludge, or other waste materials in solid, semi-solid, liquid or gaseous form which, because of its quantity,

## *Solid Waste Management Plan - Carroll County, Maryland*

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concentrations, or chemical, physical or infectious characteristics may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Categories of hazardous waste materials include, but are not limited to, explosives, flammables, oxidizers, poisons, irritants and corrosives. Hazardous waste does not include source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended.

**Household Hazardous Waste** - Waste generated in residential households that contains relatively small quantities of hazardous materials, such as paint, pesticides or solvents.

**Humus** - A product produced by the biodegradation of organic materials including solid waste.

**Incinerator** - A facility with one or more furnaces in which wastes are burned (EPA 40 CRF Ch. 1 240-101).

**Industrial Waste** - Any liquid, gaseous solid, or other waste substance, or combination thereof, resulting from process of industry, manufacturing, trade or business; or the development of any natural resource, including agriculture. (COMAR 26.08.01.01)

**Infectious Waste** - Any waste that originates from a hospital, clinic, or laboratory and that is known or suspected to be contaminated with organisms capable of producing disease or infection in humans. Infectious waste includes disposable equipment, instruments, utensils; contaminated needles, scalpels, and razor blades; human tissue and organs that result from surgery, obstetrics, or autopsy; feces, urine, vomitus, and suctionings; live vaccines for human use; blood and blood products; laboratory specimens such as tissue, blood elements, excreta, and secretions. (COMAR 26.04.07.02)

**Institutional Waste** - Waste materials originating in schools, hospitals, nursing homes, prisons, research institutions and other public or private institutional settings.

**Integrated Solid Waste Management** - A waste management strategy of combining several different waste management methods to manage and dispose of the solid waste stream. An integrated solid waste management approach includes source reduction, reuse and recycling including composting and resource recovery, incineration with recovery of energy and landfilling of residuals.

**Intermediate Disposal** - "The preliminary or incomplete disposal of solid waste including, but not limited to, transfer stations, incineration, or processing." (COMAR 26.04.07.02)

**Land Clearing Debris** - Any trees, stumps, logs, branches, brush, shrubs, downed timber, rotten wood, root mat, duff, leaf litter, soil material, rocks, etc., that remain after the clearing and/or grubbing of an area for the purpose of, but not necessarily limited to, land development, grading, residential or commercial/industrial construction, agricultural clearing, maintenance clearing, and utility easement maintenance.

**Leachate** - Any liquid that has percolated through solid waste or another medium and has extracted, dissolved, or suspended materials from it, which may include potentially harmful materials. *Leachate* collection and treatment is of primary concern at municipal waste landfills.

**Leachate Recirculation** - A method used to recirculate leachate onto, into and through waste materials in the landfill cell to enhance natural degradation.

**MDE** - An acronym for the Maryland Department of the Environment.

**Mass Burn Combustion** - The burning of untreated, unprocessed mixed municipal solid waste in a resource recovery plant or an incinerator.

**Material Recycling Facility (MRF)** - A facility that is designed, operated and authorized to receive and process recyclables by utilizing manual or mechanical methods to separate, process and classify materials for recycling purposes.

**Methane** - An odorless, colorless, flammable and explosive gas produced by municipal solid waste undergoing anaerobic decomposition. *Methane* is emitted from municipal solid waste landfills.

**Mining** - In this Plan, it refers to excavating and screening of previously landfilled waste for the purpose of recovering recyclables and potentially reusing volume.

**Monitoring Well** – “Any physical penetration made in the ground to examine ground water.” (COMAR 26.04.07.02)

**Municipal Solid Waste (MSW)** - Includes non-hazardous waste generated in households, commercial and business establishments.

**MSW Composting** - *Municipal Solid Waste Composting* is the controlled bio-degradation of municipal solid waste including some form of processing to remove inorganic materials.

**Offal** – The parts of a butchered animal that are considered inedible by human beings. Refuse in general; rubbish; garbage.

**Open Dump** - An illegal land disposal site that is not designed or operated in accordance with the requirements for a sanitary landfill as defined in COMAR 26.04.07.

**Organic Waste** - Waste material containing organic or naturally occurring carbon. The organic fraction of municipal solid waste includes paper, wood, food wastes, and yard trim.

**Post-Closure/Post-Closure Care** - The physical act of long-term monitoring and maintenance by the owner or operator of a solid waste site/facility for a specified number of years after approval of the Closure Plan by the MDE and release of the performance bond or other approved financial surety after completion of the post-closure monitoring period.

**Post-Closure Period** - The time period of post-closure care by the owner or operator of a solid waste site/facility as set forth in the approved closure/post-closure plan.

**Processed Mixed Municipal Solid Waste** - Waste which has been collected and transported to a facility where it is subject to one or more processes included, but not limited to: separation, clarification, classification, densification, size reduction, incineration and biological.

***Solid Waste Management Plan - Carroll County, Maryland***

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**Processing Facility** - A combination of structures, machinery, or devices used to reduce or alter the volume, chemical, or physical characteristics of solid waste.

**Putrescible Waste** - Any waste that may decay to enter into a state of putrefaction, the typically anaerobic splitting of proteins by bacteria and fungi with the formation of foul-smelling incompletely oxidized products.

**Recyclable Materials** - Those found in the waste stream that can readily be separated and reused in their present form or can be converted into raw materials from which new products can be manufactured.

**Recycling** - Any lawful method, technique, or process used to collect, store, separate, process, modify, convert, treat, or otherwise prepare any non-hazardous solid waste in a manner such that its component materials or substances will be beneficially used or reused.

**Refuse Derived Fuel (RDF)** - A processed fuel product, the majority content of which is mixed municipal solid waste, which can be combusted in energy recovery facilities or other facilities, and contains approximately 12 million BTU's per ton.

**Residential Waste** - Waste materials generated in single and multiple-family homes.

**Residue** - Materials remaining after processing, incineration, composting, or recycling have been completed. *Residues* are usually disposed of in landfills.

**Resource Recovery** - Reclaiming, through the processing of solid waste materials, substances, energy, or other products contained within or derived from the solid waste for sale or reuse.

**Resource Recovery Facility** - Any place, equipment, device or plan designed and/or operated to separate or process solid or liquid wastes into usable secondary materials, including fuel, steam and energy.

**Reuse** - The use of a product more than once in its same form for the same purpose, i.e., a soft-drink bottle is reused when it is returned to the bottling company for refilling.

**Sanitary Landfill** - A municipal solid waste acceptance facility, at which solid waste is deposited on or into the land as fill for the purpose of permanent disposal. Construction is in accordance with current federal/State regulators.

**Slagging** - The more or less completely fused and vitrified matter separated during the reduction of a metal from its ore.

**Sewage Sludge** - Any solid, semi-solid or liquid residue consisting of solids, combined with water and dissolved materials in varying amounts generated from a municipal, commercial, or industrial water or wastewater treatment plant or flue gas scrubber.

**Solid Waste** - "Any garbage, refuse, sewage sludge, or liquid from industrial, commercial, mining, or agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage or in irrigation return flows." (COMAR 26.03.03.01)

## *Solid Waste Management Plan - Carroll County, Maryland*

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**Solid Waste Acceptance Facility** – “Any sanitary landfill, combustion plant (i.e., incinerator), transfer station or material recovery facility (MRF), whose primary purpose is to dispose of, treat, or process solid waste.” (COMAR 26.04.07.02)

**Solid Waste Management** - “The systematic administration of activities which provide for the collection, source separation, storage, transportation, transfer, processing, treatment, re-use, or disposal of solid waste.” (COMAR 26.03.03.01)

**Source Reduction** - The design, manufacture, acquisition and reuse of materials so as to minimize the quantity and/or toxicity of waste produced. *Source reduction* prevents waste either by redesigning products or by otherwise changing societal patterns of consumption, use and waste generation.

**Source Separation** - The segregation of specific materials at the point of generation for separate collection. Residences source separate recyclables as part of a curbside recycling program.

**Special Waste** - Items that require special or separate handling, such as household hazardous wastes, bulky wastes, scrap tires and used oil.

**Subtitle C** - The section of the Federal Resource Conservation and Recovery Act (RCRA) which defines and prescribes the management and disposal of hazardous waste.

**Subtitle D** - The section of the Resource Conservation and Recovery Act (RCRA) which defines and prescribes the management and disposal of non-hazardous solid waste.

**Tipping Fee** - A fee for the unloading or dumping of waste at a landfill, transfer station, recycling center, or waste-to-energy facility, usually stated in dollars per ton; also called a disposal or service fee.

**Transfer Station** - A place or facility where waste materials are taken from one collection vehicle (i.e., compactor trucks) and placed in another transportation unit (i.e., over-the-road tractor-trailers, railroad gondola cars, barges or ships) for movement to other solid waste acceptance facilities. Collection points serving rural residential areas are not considered to be transfer stations, provided that solid waste is not transferred from a collection vehicle to another transportation unit. The movement or consolidation of a single generator’s solid waste at the site of generation may not be considered to be a transfer station.

**Tub Grinder** - A machine to grind yard and wood wastes for mulching, composting or size reduction.

**Vector** - An organism, including insects, other arthropods or rodents, which are capable of transmitting pathogens from one organism to another.

**Volume Reduction** - The processing of waste materials so as to decrease the amount of space the materials occupy usually by compacting or shredding (mechanical), incineration (thermal), or composting (biological).

**Waste Stream** - A term describing the process flow of waste materials from homes or businesses that must be recycled, burned or disposed of in landfills; or any segment thereof, such as the “residential waste stream” or the “recyclable waste stream”.

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**Waste-to-Energy** - The conversion of solid waste to energy, generally through the combustion of processed or raw refuse to produce steam and electricity.

**White Goods** - Large household appliances such as refrigerators, stoves, hot water heaters, air conditioners and washing machines.

**Windrow** - A large, elongated pile of composting material.

**Yard Trimmings** - Any leaves, grass clippings, brush, prunings, and other natural organic matter discarded from yards and gardens.

**INTRODUCTION**

**and**

**BACKGROUND**

**INTRODUCTION AND BACKGROUND**

## **I. INTRODUCTION**

### **Statement and Purpose**

The purpose of this document is to outline Carroll County's plan for the management of wastes generated in the County now and in the future. The Solid Waste Management Plan will provide the County with a plan for safe and adequate management for the County's solid waste for the ten-year planning period. Carroll County first developed its Plan in 1979. It was updated in 1983, 1996, 1999, 2002 and 2006. This plan has been officially adopted by the Board of County Commissioners for Carroll County.

Current regulations (COMAR 26.03.03) governing the development of solid waste management plans, require the Plan to address waste management and recycling for a period of at least ten years. This Plan provides for the mandated ten years of management and addresses options for management well into the future. At a minimum, the Plan will be reviewed, and updated if necessary, at least every three years.

This Solid Waste Management Plan has been prepared in accordance with current State regulations (COMAR 26.03.03). The Plan is divided into five chapters. The first chapter presents the legal and institutional framework, including County goals and objectives. Chapter Two presents County physiographic, land use and demographic data. Chapter Three outlines the current solid waste management system operating in the County and presents data on solid waste trends and projections. Chapter Four details the evaluation of current and future alternative programs and technologies for solid waste management in the County. Chapter Five presents the implementation plan, schedule, and costs for implementing the Plan.

### **Plan Approval Process**

Plan preparation was performed by the County staff responsible for solid waste management operations in Carroll County. Outside agencies, including the Health Department reviewed the Plan and submitted comments. Citizens were also part of the planning process, as were members of the Carroll County Environmental Advisory Council (EAC). All comments were factored into the Plan. A draft version of the Plan was also submitted to the Maryland Department of Environment (MDE) for a preliminary review. Comments were received and modifications made to the document.

Section 9-503 of the Environment Article Annotated Code of Maryland requires that each County maintain a solid waste management plan covering at least a ten year period. It also provides for a regular interval of amendment of the Plan and procedures for adoption. Section 9-503 also requires that the County conduct a public hearing prior to adoption and makes provisions for advertisement and circulation of the hearing.

### **Certification**

This Plan is certified to be prepared in accordance with COMAR 26.03.03.

## **II. BACKGROUND**

## *Solid Waste Management Plan - Carroll County, Maryland*

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As defined by the original Federal Solid Waste Disposal Act in 1965, solid waste includes the non-hazardous solid, liquid, or contained gaseous refuse generated by industrial, commercial and residential sources. Clearly this definition covers many types of waste, and all are addressed in this Plan. The principal focus of the Plan remains the management of waste generated by residential and commercial sources and actually brought to County facilities.

The disposal of solid waste is regulated under part 258 of Title 40 of the Federal Code of Regulations which sets federal criteria for municipal solid waste landfills, including location restrictions, facility design, and operating criteria, ground-water monitoring requirements, financial assurance and closure and post-closure care requirements.

In 1979, EPA promulgated criteria under Subtitle D of the Resource Conservation and Recovery Act (RCRA) that established minimum performance standards for both new and existing municipal solid waste landfills. States were to use these criteria to classify their disposal facilities as either open dumps or sanitary landfills. Landfills classified as open dumps were to be closed or modified to meet the Federal guidelines. Each state is required to develop a plan to implement the regulations. Under those plans, many local facilities will either close or be upgraded in order to achieve compliance. Carroll County's facilities, both open and closed, can achieve compliance.

Recycling is commonly considered to be the most environmentally sensitive method available to reduce solid waste disposal. The Maryland Recycling Act (Maryland Environmental Code §9-1703) requires counties with a population over 150,000 to reduce their waste 20% through recycling. Counties whose population is under 150,000 are required to recycle 15% of their generated waste. In the Fall of 1998, Carroll County exceeded the 150,000-population mark, changing the County's mandated recycling rate from 15% to 20%. The County's curbside recycling program was instituted in 1992 with a year-end result of 13% recycling rate. Even though recycling is faced with many challenges, especially fluctuating markets, it still continues to provide numerous benefits, including reducing landfilling of materials, conserving energy and natural resources, creating jobs and economic development.

Historically, management of solid waste within Carroll County often consisted of open dumps, as was the case in many rural areas. There is a map with legends that appears later in this document that reflects the proliferation of open dumps that were once the norm for the County. This bringing of waste to the dumps, either by individuals or by the organized collection efforts within municipalities was often accompanied by burning. As public concern about environmental impacts of this type of waste management began to grow, the laws cited above gradually came into force. Following the open dump period within the County, there began a more organized effort to bring landfilling under County control, and in the 60's and 70's, the County took over the operations of a number of these facilities; specifically and principally at Bark Hill, Hodges, John Owings and Kate Wagner. Activity at each of these facilities ceased about 15-20 years ago, and today, Bark Hill, Hodges and John Owings are covered with an impermeable cap. The County is in the process of determining the most appropriate action for the Kate Wagner Landfill. In 1980, Hoods Mill Landfill was constructed. This was the first facility in the County that was built as a sanitary landfill. Hoods Mill continued to operate until the Summer of 1994. It also received closure in

accordance with Subtitle D regulations. That action was completed in the Fall of 1998. The only landfill currently operating in the County is Northern Landfill, which is several miles to the east, southeast, of

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Westminster. That landfill was first brought into operation in the latter part of 1988, and it was constructed completely in accordance with Subtitle D regulations. At present, two of the four planned cells for Northern have been constructed with minimal filling activity occurring at this point in time, just within Cell 2. Projections for Cell 4 and the Cap Cell are detailed in Chapter Five in our future plans. Projections for Cell 4 and the Cap Cell are detailed in Chapter 5. Plans for construction of Cell 3 in 2006 are being finalized.

At present, most MSW generated in Carroll County is disposed of in out-of-county landfills. The difficulties associated with solid waste management, in general, have resulted in many communities transporting their wastes great distances for disposal, resulting in increased disposal costs. At present, this is not the case in Carroll County as adequate landfill space exists for many years as long as the majority of waste is not being landfilled. Siting new landfills is difficult due to increasing public opposition and because the environmental risks are, at best, not well defined. As siting becomes more difficult, and as the volume of waste increases, solid waste disposal, which was once considered solely a local problem, has become a combined local, State, regional, and national concern. Regardless of the fact that Carroll County currently has adequate landfill space, investigation is continuing into alternatives to local landfilling, including an increased emphasis on waste prevention, recycling, transfer, composting and waste-to-energy. Additional local landfill development must also be considered a contingency.

Alternatives to the reliance on landfills in Carroll County include a combination of waste minimization, education, transfer (short and long-term), composting, source separation, recycling, and waste-to-energy, all of which result in waste avoidance, residual reuse, or resource recovery but still also require minimal landfilling dependence.

Over the past 50 years, waste combustion became the first choice of many local officials nationwide. This process reduces waste volume by up to 90% and allows for continued operation of existing collection systems. Most newly constructed waste combustion plants, however, are no longer merely incinerators, but waste-to-energy facilities that convert useful thermal energy from burning solid wastes to steam and/or electricity and thus, recover valuable resources from the waste stream. The process also offsets the need to prematurely consume finite resources such as oil, gas and coal. Proposals for new combustion facilities, like those for landfills, often meet considerable public opposition. The public has concerns about effective control of air emissions from combustion plants, as well as for safe disposal of residual ash. Similarly, the public is also concerned over the potential for ground water contamination, as well as air pollution from landfills.

According to the Environmental Protection Agency (EPA), in 1999, U.S. residents, businesses and institutions produced more than 230 million tons of MSW, which is approximately 4.6 pounds of waste per person per day, up from 2.6 pounds per person per day in 1960. EPA's composition of waste materials generated is shown in Table I-1.

Packaging accounts for about one-third of all municipal waste, by weight. The largest percent of the packaging is paper, followed by glass, plastic, and metals. Because of the decreased use of steel and glass in the manufacturing of containers, packaging and containers have been growing at a slower rate than the rest of the solid waste stream when measured by weight, but not by volume. For example, a 1988 EPA Study concluded that while plastics accounted for only 8% of discarded materials by weight, they accounted for 20% by volume.

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Variations in the volume and composition of solid waste are affected by numerous factors including changes in population, development trends, land use, affluence, technology and patterns of social changes. In general, as population and wealth increases and as the ability to produce disposable packing and products improves, waste volumes increase.

During the ten-year planning period, landfills will continue to play an important role in solid waste disposal in Carroll County, even if greater use is to be made of recycling, composting, and combustion. When considering any management techniques; however, the cost must be weighed against the benefit. For example, of the approximate 120,000 tons of MSW generated in Carroll County each year, it is estimated that about 20,000 tons cannot and should not be, combusted, i.e., most construction debris, old appliances, ferrous and non-ferrous metals, glass, and other materials which will not burn. If all of the 100,000 tons remaining were combusted, over 25,000 tons would end up as ash or residue, which must be managed somehow, landfilling being an option.

Carroll County, like many other communities, has turned to recycling as a partial response to the need to maximize landfill capacity and minimize environmental impact. Theoretically, most consumer discards can be recycled, but in practice, recycling handles about the same percentage of the waste stream nationally as combustion. In 1992, about 13% of the municipal waste stream was recycled, up from 6.7% in 1990. Carroll County's original drop-off oriented program resulted in recycling of approximately 6% of the waste stream. Carroll County has also instituted a hauler mandated curbside program that has achieved the former 15% State recycling mandate and now exceeds the new 20% recycling goal. A recycling rate of 32% was achieved in 2004.

Composting, like other recycling techniques, is a proven technology and can be used to return organic materials to the soil, a form of recycling resources. Yard waste and sewage sludge composting is easily accomplished and can help to reduce landfill tonnages. Both yard waste and sewage sludge are readily converted into a usable soil additive eliminating the need to dispose of it in the landfill. Solid waste composting, however, does not have the history of success experienced with other waste streams. As technologies evolve, MSW composting may prove more economically viable and should remain a consideration. Success rates at operating plants have improved, but nuisance issues and market stability remain a concern.

All of the management options previously discussed assume waste generation. It is true that Carroll County must be realistic in its waste projections. It is also true that a strong emphasis on education to reduce the waste stream through consumer response and County purchasing policies, over the long term, is necessary. If we can reduce our reliance on technological treatment and disposal options by reducing the waste stream, then management will become less of a long-term concern.

In addition, as recycling is further utilized in Carroll County, its effect on the other aspects of solid waste management (i.e., landfills) will be regularly reassessed. During the ten-year planning period, the Solid Waste Management Plan for Carroll County will involve waste prevention/source reduction, recycling, yard trimmings and mulching, composting, landfill mining, leachate recirculation, C&D recycling, electronics recycling, transfer of the majority of MSW and minimal use of the Northern Landfill for disposal.

The Plan should be reviewed, and amended if necessary, as required or at a minimum, every three (3) years (Section 9-503 of the Environment Article, Annotated Code of Maryland), and an assessment of trends in

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volumes requiring ultimate disposal will be performed over that period and adjustments made. This planning  
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effort will continue to assess the potential for use and reliance on waste management technologies other than landfilling, considering lead time necessary to design, license, and construct any new solid waste management facility.

***INTRODUCTION AND BACKGROUND***

***TABLES***

TABLE I-1

**PROJECTIONS OF MATERIALS GENERATED\*  
IN THE MUNICIPAL WASTE STREAM: 1994, 2000, AND 2010  
(In Thousands of Tons and Percent of Total Generation)**

MATERIALS	THOUSANDS OF TONS			PERCENT OF TOTAL			
	Year	1994	2000	2010	1994	2000	2010
Paper and Paperboard		81,300	91,260	108,860	38.9%	40.9%	41.5%
Glass		13,270	14,190	15,650	6.3%	6.4%	6.0%
Metals							
Ferrous		11,520	12,830	15,010	5.5%	5.8%	5.7%
Aluminum		3,060	3,510	4,300	1.5%	1.6%	1.6%
Other Non-ferrous		1,210	1,350	1,660	0.6%	0.6%	0.6%
<b>Total Metals</b>		<b>15,790</b>	<b>17,690</b>	<b>20,970</b>	<b>7.6%</b>	<b>7.9%</b>	<b>8.0%</b>
Plastics		19,840	23,290	28,940	9.5%	10.5%	11.0%
Rubber and Leather		6,370	7,280	8,780	3.0%	3.3%	3.4%
Textiles		6,560	7,490	9,220	3.1%	3.4%	3.5%
Wood		14,590	16,490	19,930	7.0%	7.4%	7.6%
Other		3,590	4,000	4,790	1.7%	1.8%	1.8%
<b>Total Material in Products</b>		<b>161,310</b>	<b>181,690</b>	<b>217,140</b>	<b>77.2%</b>	<b>81.5%</b>	<b>82.9%</b>
Other Wastes							
Food Wastes		14,070	14,900	16,300	6.7%	6.7%	6.2%
Yard Trimmings		30,600	23,000	25,000	14.6%	10.3%	9.5%
Misc. Inorganic Wastes		3,100	3,280	3,590	1.5%	1.5%	1.4%
<b>Total Other Wastes</b>		<b>47,770</b>	<b>41,180</b>	<b>44,890</b>	<b>22.8%</b>	<b>18.5%</b>	<b>17.1%</b>
<b>Total MSW Generated Weight</b>		<b>209,080</b>	<b>222,870</b>	<b>262,030</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

- Generation before materials recovery or combustion.  
Source: Franklin Associates for EPA  
Characterization of Municipal Solid Waste in the United States 1998 Update